

REMARKS

The present invention relates to a multilayered printed circuit board.

In the Office Action of February 23, 2006, it is first of all appreciated that the Examiner has allowed claims 9 and 36, and has indicated that claims 32 and 34 are merely objected to, but would be allowable if rewritten in appropriate independent form. Claims 31, 33, 37, and 38 stand rejected, with claims 31 and 33 being rejected under 35 U.S.C. § 103(a) based on Reed in view of Kenji et al, and claims 37 and 38 being rejected under § 103(a) based on Reed in view of Kenji et al and further in view of Miyamura et al.

As discussed below, the claims have been amended responsive to the objections and rejections, and to improve the clarity thereof.

More particularly, claims 31 and 33 have been amended to more clearly describe the phosphoric acid residue.

In response to the Examiner's comments on claims 32 and 34 being allowable if rewritten, claims 32 and 34 have been rewritten in appropriate independent form.

Support for newly added claims 39 and 40 can be found, e.g., at page 57, lines 26 to 28 in the specification.

According to the present invention, the solder resist layer contains a P atom-containing epoxy resin.

Concerning claim 31, the P atom-containing epoxy resin has bivalent phosphoric acid residue and has epoxy groups in both terminals. The bivalent phosphoric acid residue has two substituents (R^1 and R^2) and a hydroxyl group.

Concerning claim 33, the P atom-containing epoxy resin has a monovalent phosphoric acid residue in one terminal and an epoxy group in the other terminal. The monovalent phosphoric acid residue has a substituent R and two hydroxyl groups.

The hydroxyl group of the P atom-containing epoxy resin enhances the adhesion of the epoxy resin to the resin insulating layer. Even when a stress is generated in the solder resist layer (e.g., due to thermal expansion), a strong adhesion between the solder resist layer and the resin insulating layer prevents peeling of the solder resist layer.

Kenji et al discloses a phosphorus containing epoxy resin. However, the epoxy resin of Kenji et al does not have a hydroxyl group bonded to the P atom. Even if the epoxy resin of Kenji et al is employed as a solder resist layer for the multilayer circuit board of Reed, a strong adhesion between the solder resist layer and the insulating layer cannot be obtained. Furthermore, Kenji et al does not teach or suggest an epoxy resin having a bivalent phosphoric acid residue or a monovalent phosphoric acid residue. Kenji et al is silent as to a strong adhesion provided by the hydroxyl group bonded to the P atom.

The epoxy resin of the present invention is different in constitution from that of Kenji et al, and there is no motivation found in Kenji et al to obtain the epoxy resin of the present invention. Accordingly, the epoxy resin of the present invention is neither anticipated by nor obvious over Kenji et al. Even if Reed is combined with Kenji et al, the present invention is not rendered obvious.

Concerning claims 37 to 40, the inorganic filler (a silicon compound, an aluminum compound or a magnesium compound) in the solder resist layer moderates the stress generated in

the solder resist layer, and, as a result, cracking in the solder resist layer and peeling of the solder resist layer from the conductor circuits do not easily take place (see page 57, line 34 to page 58, line 5 in the specification).

Miyamura et al does not teach P atom-containing epoxy resin, and does not make up for the deficiency of Reed in view of Kenji et al.

Accordingly, even if Reed, Kenji et al and Miyamura et al are combined, it is not obvious to use the P atom-containing epoxy resin of the present invention. Thus, the present invention is not rendered obvious over these cited references.

In view of the above, reconsideration and allowance of claims 9, 31-34, and 36-40 of this application are now believed to be in order, and such actions are hereby earnestly solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C., telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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